

CLAIMS

1 1. A load lifting apparatus for lifting a load to and from a
2 platform, comprising:
3 a unitary frame including:
4 a first side plate and a second side plate, each
5 having a plurality of orifices formed
6 therein; and
7 an extension plate extending between said first
8 side plate and said second side plate;
9 a lift frame pivotally attached to said first side plate
10 and said second side plate and including:
11 a pivot member; and
12 a load carrying plate rotatably attached to said
13 pivot member;
14 a first frame adapter and a second frame adapter, each
15 including:
16 a first segment adapted for attaching to the
17 platform; and
18 a second segment substantially perpendicular to
19 said first segment and having a plurality of
20 apertures formed therein; and
21 a plurality of fastening devices attaching said first
22 frame adapter and said second frame adapter to
23 respective said first side plate and said second
24 side plate through said plurality of apertures and
25 said plurality of orifices.

- 1 2. The load lifting apparatus of claim 1, further comprising
2 a plurality of bolts bolting said first segment of said
3 first frame adapter and said first segment of said second
4 frame adapter to an underside of the platform.
- 1 3. The load lifting apparatus of claim 1, wherein:
2 said plurality of apertures in said second segment of
3 said first frame adapter include a first plurality
4 of elongated slots; and
5 said plurality of apertures in said second segment of
6 said second frame adapter include a second
7 plurality of elongated slots.
- 1 4. The load lifting apparatus of claim 3, wherein:
2 said first plurality of elongated slots are substantially
3 parallel to each other; and
4 said second plurality of elongated slots are
5 substantially parallel to each other.
- 1 5. The load lifting apparatus of claim 4, wherein:
2 said first plurality of elongated slots are oblique with
3 respect to said first segment of said first frame
4 adapter; and
5 said second plurality of elongated slots are oblique with
6 respect to said first segment of said second frame
7 adapter.

- 1 6. The load lifting apparatus of claim 1, further comprising
2 a motion limiting device attached to said lift frame
3 adjacent said pivot member and configured to limit a
4 motion of said load carrying plate.

- 1 7. The load lifting apparatus of claim 1, further comprising
2 a hydraulic actuator mounted on said unitary frame and
3 coupled to said lift frame.

- 1 8. The load lifting apparatus of claim 1, further comprising
2 an impact bumper attached to said unitary frame.

- 1 9. The load lifting apparatus of claim 1, wherein said lift
2 frame further includes a lift frame bar configured to
3 function as an underride guard.

- 1 10. The load lifting apparatus of claim 1, wherein said
2 unitary frame further includes at least one upper
3 stacking member and at least one lower stacking member, a
4 profile of said lower stacking member being configured to
5 nest with a profile of said upper stacking member.

1 11. A cantilever lift gate configured for lifting loads to a
2 vehicle, comprising:
3 a unitary frame including an opposing pair of side plates
4 and an extension plate extending there between,
5 each of said opposing pair of side plates having a
6 plurality of orifices formed therein adjacent an
7 upper edge thereof;
8 an actuator driven lift frame pivotally attached to said
9 pair of side plates and having a pivot member;
10 a lift gate platform attached to said pivot member; and
11 a pair of brackets, each including a first arm configured
12 for attaching to a vehicle body and a second arm
13 having a plurality of slots; and
14 a plurality of fastening devices coupling said pair of
15 brackets to said opposing pair of side plates
16 through said pluralities of slots and said
17 pluralities of orifices.

- 1 12. The cantilever lift gate of claim 11, wherein said
- 2 plurality of slots in said pair of brackets allow a
- 3 position of said extension plate of said unitary frame to
- 4 be adjusted relative to the vehicle body.

- 1 13. The cantilever lift gate of claim 12, wherein said
- 2 extension plate of said unitary frame is adjusted to be
- 3 substantially coplanar with a floor of the vehicle body.

- 1 14. The cantilever lift gate of claim 11, wherein said
- 2 actuator driven lift frame is configured to be attached
- 3 to said unitary frame prior to said pair of brackets
- 4 being attached to the vehicle body.

- 1 15. The cantilever lift gate of claim 11, further comprising
- 2 a motion limiting stop attached to said actuator driven
- 3 lift frame adjacent said pivot member and configured to
- 4 limit a rotational motion of the lift gate platform.

1 16. A lift gate for use with a vehicle having a vehicle bed,
2 comprising:
3 a unitary frame including first and second side plates
4 having a plurality of orifices formed therein, and
5 a trunnion bar and an extension plate extending
6 between said first and second side plates;
7 a lift frame including first and second parallelogram
8 linkages, each having an upper arm, a lower arm, a
9 distal pivot member, and a proximal pivot member
10 secured to said trunnion bar, a lift frame bar
11 extending between said lower arms, and a lift gate
12 platform attached to said distal pivot members of
13 said first and second parallelogram linkages;
14 an actuator pivotally secured to said trunnion bar and to
15 said lift frame bar, an extension of said actuator
16 raising said lift gate platform in a first
17 orientation to a raised position substantially
18 coplanar with said extension plate and inverting
19 said lift gate platform in a second orientation
20 into a stowed position;
21 first and second brackets, each including a first segment
22 configured for attaching to an underside of the
23 vehicle bed and a second segment having a plurality
24 of slots formed therein; and
25 a plurality of fastening devices coupling said first and
26 second brackets to respective said first and second
27 side plates through said pluralities of slots and
28 said pluralities of orifices.

- 1 17. The lift gate of claim 16, wherein said plurality of
- 2 slots in said first and second brackets allow an
- 3 adjustment of a position of said extension plate of said
- 4 unitary frame relative to the vehicle bed.
- 1 18. The lift gate of claim 17, wherein:
2 said first segment of each of said first and second
3 brackets is substantially perpendicular to said
4 second segment thereof; and
5 said plurality of slots in said first and second brackets
6 includes slots formed in said second segments and
7 oblique with respect to said first segments.
- 1 19. The lift gate of claim 16, further comprising first and
2 second motion restriction tabs mounted on said first and
3 second parallelogram linkages adjacent said distal pivot
4 members, said first and second motion restriction tabs
5 preventing a rotation of said lift gate platform away
6 from said upper and lower arms past the first orientation
7 substantially parallel to said extension plate and
8 allowing a rotation of said lift gate platform toward
9 said upper and lower arms to the second orientation
10 substantially perpendicular to said extension plate.
- 1 20. The lift gate of claim 16, wherein said actuator includes
2 a hydraulic cylinder.

1 21. A method for providing a cantilever lift gate, comprising
2 the steps of:

- 3 (a) providing a unitary frame comprising an opposing
4 pair of side plates and an extension plate
5 extending between the side plates;
6 (b) attaching a lift frame to the side plates;
7 (c) rotatably attaching a side of a lift gate platform
8 to a pivot member of the lift frame; and
9 (d) attaching a pair of brackets to the opposing pair
10 of side plates in the unitary frame using bolts
11 through a plurality of apertures formed in the
12 brackets and the side plates.

1 22. The method of claim 21, further comprising the step of
2 attaching a motion limit member to the pivot member of
3 the lift frame to confine a motion of the lift gate
4 platform between a first orientation and a second
5 orientation substantially perpendicular to each other.

1 23. The method of claim 21, further comprising, after
2 completing steps (a), (b), (c), and (d), the steps of:
3 (e) securing the brackets to a vehicle body; and
4 (f) aligning the extension plate in the unitary frame
5 to the vehicle body by adjusting an position of the
6 apertures in the pair of side plates relative to
7 the apertures in the pair of brackets.

- 1 24. The method of claim 23, further comprising, after
- 2 completing steps (a), (b), (c), and (d), and before
- 3 performing steps (e) and (f), the step of:
- 4 (g) stacking the cantilever lift gate on top of another
- 5 cantilever lift gate.

- 1 25. The method of claim 24, further comprising, after
- 2 completing steps (a), (b), (c), (d), and (g), and before
- 3 performing steps (e) and (f), the step of:
- 4 (h) packaging and shipping the stacked cantilever lift
- 5 gates together.